AMENDMENTS TO THE CLAIMS

Complete Listing of Claims

In the Claims:

1. (Currently Amended) A sensor arrangements for detecting radiation having a layer sequence which contains, in the order indicated:

a holding substrates which is permeable to the detectable radiation, at least in regions, or produces the detectable radiation when radiation impinges thereon and which holds a plurality of detection elements in the sensor arrangement,

at least one auxiliary layers which is permeable to the detectable radiation and extends continuously over a set of the plurality of detection elements or which contains separate regions which are respectively associated with a detection element,

a detection layers with separate detection regions which are contained in a detection element and respectively contain at least one semiconductor component which is sensitive to the detectable radiation, ~~and~~

an insulating layer with separate insulating regions for electrically insulating the detection regions from a point of contact having electrically conductive connections and pads fitted on a free side, the pads being electrically connected to connecting points which are routed to the semiconductor components[[.]] , and

wherein the holding substrate contains at least one of: a material which converts impinging particle radiation or radiation which is high in energy as compared with the detectable radiation into the detectable radiation, and a material which converts X ray radiation into radiation which can be detected with a pin diode.

2. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein the holding substrate contains regions which are permeable to the detectable radiation and are respectively contained in a detection element, and the holding substrate contains, between the detection elements, regions which absorb or reflect the detectable radiation.

3. (Canceled)

4. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein at least one of: at least one of the regions of the auxiliary layers, the detection regions, and the insulating regions are separated by a filling material, the filling material is a plastic, and the filling material has been mixed with a material which absorbs or reflects the detectable radiation.

5. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein at least one of: the auxiliary layer is a glass layer or a ceramic layer, the insulating layer is a glass layer, the detection layer contains a semiconductor support material, and the point of contact contains solder material.

6. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein at least one of: a detection area on the detection elements is smaller than five square millimeters, and the sensor arrangements contain more than two hundred detection elements.

7. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein each of the semiconductor components contains a doped region of one conduction type, a doped region of another conduction type and, between these doped regions, an intermediate region which is undoped or is provided with a weak doping as compared with the doping of the other doped regions.

8. (Currently Amended) A computer tomograph comprising:

a radiation transmission unit for emitting radiation;

a detection unit for detecting the emitted radiation following passage of the emitted radiation through a tissue which influences a radiation intensity; and

an evaluation unit which receives output signals from the detection unit as the basis for producing image data for an image of a structure of the tissue,

wherein the detection unit contains a sensor arrangement, the sensor arrangement comprising in the order indicated:

a holding substrate which is permeable to the emitted radiation, at least in regions, or produces detectable radiation when the emitted radiation impinges thereon and which holds a plurality of detection elements in the sensor arrangement,

at least one auxiliary layer which is permeable to the emitted or detectable radiation and extends continuously over a set of the plurality of detection elements or which contains separate regions which are respectively associated with a detection element,

a detection layer with separate detection regions which are contained in a detection element and respectively contain at least one semiconductor component which is sensitive to the emitted or detectable radiation, ~~and~~

an insulating layer with separate insulating regions for electrically insulating the detection regions from a point of contact having electrically conductive connections and pads fitted on a free side, the pads being electrically connected to connecting points which are routed to the semiconductor components[[.]] , and

wherein the emitted radiation is X ray radiation.

9. (Currently Amended) A method for manufacturing a sensor arrangement, the method comprising performing without any limitation by the order indicated:

manufacturing a large number of integrated radiation-sensitive semiconductor components starting from a support substrate made of semiconductor material of an initial thickness,

mechanically connecting the support substrate and an auxiliary substrate on one side of the support substrate, the one side containing radiation-sensitive areas of the semiconductor components,

thinning the support substrate on a bare side to a thickness which is less than the initial thicknesses,

mechanically connecting a free side of the support substrate to an insulating substrate,

disposing pads a free side of the insulating substrate,

separating the insulating substrate is at least one of: at boundaries between individual semiconductor boards having a large number of semiconductor components and at boundaries between the individual semiconductor components, with the auxiliary substrate not being separated,

electrically connecting the pads to connecting points which lead to the semiconductor components,

mechanically connecting the auxiliary substrate and a holding substrate on a bare side of the auxiliary substrate, with the holding substrate containing at least one of: a material which converts impinging particle radiation or radiation which is high in energy as compared with the detectable radiation into the detectable radiation, and

a material which converts X ray radiation into radiation which can be detected with a pin diode ~~being permeable to detectable radiation, at least in regions, or producing the detectable radiation when radiation impinges thereon~~, and

separating the auxiliary substrate at at least one of: the boundaries between the individual semiconductor boards and individual semiconductor components, with the auxiliary substrate not being separated between the individual semiconductor boards and individual semiconductor components.

10. (Previously Presented) The method as claimed in claim 9, further comprising separating the thinned support substrate at at least one of: the boundaries between the individual semiconductor boards and the boundaries between the individual semiconductor components, with the auxiliary substrate not being separated and with at least one interconnect in a metallization layer of the semiconductor components being exposed at a connecting point.

11. (Currently Amended) The method as claimed in claim 9, further comprising filling a ~~separation point~~ a cut at a boundary between semi-conductor components with a filling material.

12. (Canceled)

13. (Previously Presented) The sensor arrangement as claimed in claim 1, wherein the holding substrate contains at least one of a highly absorbent semiconductor material, CdZnTe, PbO, and GaO sulfide.

14. (Currently Amended) The sensor arrangement as claimed in claim ~~1~~ 11, wherein the filling material is an epoxy resin.

15. (Currently Amended) The sensor arrangement as claimed in claim ~~1~~ 11, wherein the filling material is mixed with titanium dioxide.

16. (Original) The sensor arrangement as claimed in claim 1, wherein the detection layer contains silicon.

17. (Canceled)

18. (Original) The method as claimed in claim 9, wherein the thinned support substrate is separated before the free side of the support substrate is mechanically connected to the insulating substrate.